

# ***Federal R&D Funding by Budget Function***

***Fiscal Years 1996-98***

An SRS Special Report

Division of Science Resources Studies  
Directorate for Social, Behavioral and Economic Sciences

***National Science Foundation***



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Division of Science Resources Studies  
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# NOTES TO THE READER

This annual report contains information on Federal funding of the research and development (R&D) components of agency programs, as proposed by the administration for fiscal year (FY) 1998. R&D data in this report are classified into the same Federal budget function categories used in the *Budget of the United States Government, Fiscal Year 1998*. Proposed FY 1998 funding levels are for budget authority (defined below), which is the basis for initial congressional action. In future *Budget Function* reports, these data will be revised to reflect congressional appropriation and actual program funding decisions. Detailed data are included on *preliminary* estimates for Federal funding of R&D in FY 1997 that reflect all past congressional actions, but may be revised since, at the time of report preparation; FY 1997 had not yet been completed. This report also includes detailed data (by subfunction) on actual budget authorizations of R&D by Federal agencies in FY 1996, and aggregate data (by broad function) on actual R&D budget authorizations in FY 1995 and earlier years.

Although the Federal budget discussed in this report has been available for several months, it is still useful to look at those numbers in a concise format. Publication of this report was delayed to allow a few agencies to resolve certain detailed budget items presented in the text and tables. National Science Foundation (NSF) viewed this information as a critical part of the report.

## REPORT ORGANIZATION

These notes introduce the basic budget terms and concepts used in this report. The rest of the report is divided into three sections:

***Research and Development in the 1998 Budget: An Overview*** provides an overview of Federal funding of R&D within the context of requested total Federal budget authority. This section consists of five tables. Tables 1, 2, 4, and 5 provide an overview of Federal R&D funding within the context of requested total Federal budget authority. Table 3 details Federal R&D funding for national defense and civilian programs in current and constant 1992 dollars for FYs 1955-98.

***R&D by Specific Budget Function*** summarizes activities conducted within each budget function. Programs within the five functional categories that account for 90 percent of the R&D sponsored by the Federal Government are discussed briefly; data on R&D activities within the remaining functional categories are presented in tabular form only. This section consists of 19 tables (tables 6 through 24), which provide a summary of R&D activities conducted within each Federal budget function.

***Historical Tables*** presents two historical data series: (1) Federal R&D funding by function for fiscal years 1955-98 (tables 25a through 25g) and (2) Federal funding of basic research for fiscal years 1978-98 (tables 26a through 26c).

## DEFINITIONS

### *Research and Development*

As used in this report, R&D refers to research—both basic and applied—and development activities in the sciences and engineering.

**Research** is a systematic study directed toward fuller scientific knowledge or understanding of the subject studied. Research is classified as either basic or applied according to the objective of the sponsoring agency.

- In **basic research** the objective of the sponsoring agency is to gain fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.
- In **applied research** the objective of the sponsoring agency is to gain knowledge or understanding necessary for determining means by which a recognized and specific need may be met.

**Development** is the systematic use of the knowledge or understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including design, development,

and improvement of prototypes and new processes. It excludes quality control, routine product testing, and production.

Funds for conducting R&D include those for personnel, program supervision, and administrative support directly associated with R&D activities. Expendable or movable equipment needed to conduct R&D—e.g., microscopes or spectrometers—is also included.

This report does not include data on R&D plant funds—i.e., funds for R&D facilities such as reactors, wind tunnels, or particle accelerators or for the construction, repair, or alteration of such facilities. Also excluded are all non-R&D activities performed within budget functions that conduct R&D and all functions in which no R&D is conducted.

#### *Budget Authority, Obligations, and Outlays*

The Federal R&D funding data presented here are, with a few noted exceptions, provided in budget authority. Budget authority is used because it is the initial budget parameter for congressional action on the President's proposed budget. Budget authority imposes a ceiling on obligations and outlays; obligations and outlays flow from budget authority.

- **Budget authority** is the primary source of legal authorization to enter into obligations that will result in outlays. Budget authority is most commonly granted in the form of appropriations by the congressional committees assigned to determine the budget for each function.
- **Obligations** represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated and when the future payment of money is required.
- **Outlays** represent the amounts for checks issued and cash payments made during a given period, regardless of when the funds were appropriated or obligated.

## BUDGET FUNCTIONS

All activities covered by the Federal budget, including R&D, are classified into 20 broad functional

categories. The Federal budget total comprises funding for these 20 functions. An agency's activities are not necessarily included in only one function. Instead, the programs of one agency typically are distributed across functions, and each function often includes programs from multiple agencies. No overlap occurs between functions or between the various agency programs within those functions. In a few cases components of a major national effort are funded through multiple functions, such as the Human Genome mapping effort (health and energy).

Notably, each specific R&D activity is assigned to only one function area, consistent with the official codes used in budget documents, even though the R&D activity may address several functional concerns. For example, except for those of the Army Corps of Engineers, all R&D activities sponsored by the Department of Defense (DoD) are classified as defense, even though some activities have secondary objectives such as space or health. Moreover, only R&D funded by the Department of Health and Human Services and the Department of Labor is classified in the health function category. Yet some R&D funding, from at least three agencies—DoD and the Departments of Energy and Veterans Affairs—has a major health component.

The functional categories and definitions used in this report are the same as those used in the Federal budget, with one exception. R&D activities categorized as general science, space, and technology (function 250) are reported separately here. Subfunction 251 contains R&D activities for general science and basic research, and subfunction 252 contains R&D activities for space research and technology. Not all federally sponsored basic research is categorized in function 251, however; some basic research is included in the remaining 19 functional categories.

Five Federal budget functions—Medicare (function 570), social security (function 650), net interest (function 900), allowances (function 920), and undistributed offsetting receipts (function 950)<sup>3/4</sup> have no R&D components. Consequently, they are not discussed in this report, except where R&D is described as a proportion of total Federal budget authority.

The Agency/Function Crosswalk on page 5 lists—by name and function code—the 16 individual R&D functions funded by agencies.



## DATA SOURCES

Within the overall Federal Budget there is no separately identified R&D budget as such; nor are most appropriations for R&D so labeled except in the case of certain program areas, such as in defense, energy, health, and environment. Consequently, most funds for R&D are not line items in an agency's budget submission but are included within general program funding. To determine funding for Federal R&D, the Office of Management and Budget (OMB) requires agencies whose annual R&D funding is greater than \$10 million to submit data on their R&D programs as part of their annual budget submissions. Specifically, the agencies provide data—reported, in accordance with OMB Circular A-11, Max Schedule C, “Research and Development Activities”—on funding levels for basic research, applied research, development, R&D facilities, and R&D support to universities and colleges.

The data in this report represent agencies' best estimates of actual and proposed Federal funding for R&D collected during the period February 6 through April 30, 1997. These data are based primarily on information provided to OMB by 22 agencies and account for more than 99 percent of all federally sponsored R&D activities. Also incorporated in this report is R&D information that became available from the individual agencies after the administration's budget was prepared and reported in the *Budget of the United States Government*. Such information consists of agency budget justification documents submitted to Congress and supplemental, program-specific information obtained from agency budget and program staff through mid-May 1997. Therefore, budget numbers for individual activities, programs, or agencies may differ slightly from those published in the President's budget or agency budget documents.

AGENCY/FUNCTION CROSSWALK														
AGENCIES	FUNCTIONS													
	National Defense (050)	Health (550)	Space Research and Technology (252)	General Science (251)	Energy (270)	Transportation (400)	Natural Resources and Environment (300)	Agriculture (350)	Education, Training, Employment, and Social Services (500)	Veterans Benefits and Services (700)	International Affairs (150)	Commerce and Housing Credit (370)	Community and Regional Development (450)	Administration of Justice (750)
Agency for International Development											●			
Corps of Engineers (Civil)							●							
Dept. of Agriculture							●	●						
Dept. of Commerce							●					●	●	
Dept. of Defense (Military)	●													
Dept. of Education									●					
Dept. of Energy	●			●	●									
Dept. of Health and Human Services		●							●					●
Dept. of Housing and Urban Dev.													●	
Dept. of Justice														●
Dept. of Labor		●							●					●
Dept. of the Interior							●							
Dept. of the Treasury													●	●
Dept. of Transportation						●								
Dept. of Veterans Affairs										●				
Environmental Protection Agency							●							
National Aeronautics and Space Adm.			●			●								
National Science Foundation				●										
Nuclear Regulatory Commission					●									
Smithsonian Institution									●					
Social Security Administration														●
Tennessee Valley Authority					●								●	

**SOURCE:** Agencies' submissions to Office of Management and Budget Circular No. A-11, Max Schedule C, "Research and Development Activities"; agency budget justification documents; and supplemental data obtained from the agencies' budget offices.